

The Hidden Power of Odors

*Studying scents in the academic
marketing literature*

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1 INTRODUCTION

Senses make the world for us. Any experience without one of our five senses would not be the same. It is evident that all five senses are important contributors to the holistic experience, yet marketers have mainly focused on sight and hearing (Morrin and Ratneshwar, 2000). Today our surroundings are cluttered with marketing messages, which makes it difficult for a company to distinguish itself from its competitors (Aker, 2011). Because companies struggle to catch the customer's attention with visual stimuli, they have started to trust more primitive senses to pass through the information overload (Krishna, 2010; Lindström, 2006; Lwin et al. 2010). One of the underrated senses is the sense of smell that has recently become a huge marketing trend (Klara, 2012).

Using scents for marketing purposes stems from 1920's, when Coco Chanel asked shop assistants to spray her expensive new perfume Chanel no. 5 all over the store in order to boost the sales (Klara, 2012). Another company to first understand the power of scent in creating a pleasant customer experience was Singapore Airlines that in 1990 began to use a signature fragrance, *Stefan Floridian Waters*, in its hot towels (Orvis, 2016). Over time using scents to improve the flight experience has become a common practise in the private aviation industry as airline companies such as British Airlines (Klara, 2012), Delta, United and Turkish Airlines spray ambient odors in their plane cabins and business lounges (Strutner, 2015).

Numerous companies in various industries ranging from financial institutes to car dealers (Smiley, 2014) have also adopted the practice of using scents for marketing purposes. Many international retail companies such as Victoria's Secret (Klara, 2012), Abercrombie & Fitch (Smiley, 2014), Hugo Boss and Jimmy Choo (Klara, 2012) have all their own signature scents. Moreover, Starbucks (Orvis, 2016), M&M (Independent, 2011) and Dunkin' Donuts (Chebat and Michon, 2003) use scents to attract customers with their recognizable smell. Similar examples can be found from car and technology industries. Rolls Royce cars come with the special scent and in 2003 General Motors introduced a signature scent, *Nuance*, for its Cadillac car (Lindström, 2005). In addition, the customers visiting the New York flagship shop of Samsung shop under honeydew melon scent (Klara, 2012).

It would appear that using pleasant odors for marketing and branding purposes is a fairly well known and used method in the business world. Yet the direct benefits from using scent to influence consumer behaviour remain still quite unclear (Hermann et al. 2013). Many researchers have managed to show a link between ambient scents and positive customer behaviour (e.g. Hermann et al. 2013; Chebat and Michon, 2003; Doucé et al. 2013; Jacob et al. 2014; Leenders et al. 2016; Parsons, 2009) but the findings lack generalizability (McGrath et al. 2016). What is more, some study results indicate that using odors for marketing purposes may even be harmful to the brand if they are used wrongly (Doucé et al. 2014; Ellen and Bone, 1998). To truly gain understanding of the advantages of scents in the business context, the subject needs to be further studied.

In this thesis, I will map academic literature written on scents in the marketing context. Excluding the first chapter, I will limit this literature review to cover only the studies that conducted marketing and consumer research because the focus of this paper is to study odor influence merely on consumer behaviour. In addition, this thesis excludes the research studying the products (i.e. food and perfumes) and environments (i.e. bakeries, restaurants) that naturally are naturally odorous. This exclusion is made because the food and perfume industries have their own special characteristics and research objectives that are considered less relevant in terms of this literature review.

In the beginning of this thesis, I will explain the general process of smelling and the special features of the sense of smell. In the second and third chapter, the attention will be drawn to the few scent attributes that have gathered most of the researchers' attention in the marketing literature. Following this, the fourth chapter will cover the main effects that scents have been found to have on consumer behaviour. Finally, I will conclude the thesis with a discussion on the benefits and disbenefits of using scents to boost business and indicate a few research areas that need more research in the future.

2 ODORS AND THE SENSE OF SMELLING

2.1. THE PURPOSE OF ODORS

Odors are chemicals that humans and organisms produce. Odors are perceived through our noses and they give us information about the environment and tell us how we should act in it (Holley, 2002). The sense of smell, together with the sense of taste, is one of the most primitive senses of human beings. This means that we often perceive odors without even noticing it. Moreover, we easily habituate ourselves with odors. Consider entering a space with bad air. The air might bother you during the first minutes, but after a while you may even forget that the air is bad.

Olfaction (sense of smell) and gustation (sense of taste) are psychologically connected and together they play an important role in food consumption (Møller, 2003). The sense of smell accompanies the sense of taste at least in two ways. Firstly, odors together with vision, colours and shapes help us to select our food. Secondly, the olfactory system boosts the food flavours making the food tastier (Møller, 2003). In fact, it has been said that flavour is 80% smell and 20% taste. This makes sense if we imagine the eating experience during a flu. Consequently, olfaction is a warning system that tells us if we are in immediate danger (Köster, 2002; Møller, 2003). We have to instantly notice if the air we are breathing is toxic or if the food that are eating is dangerous.

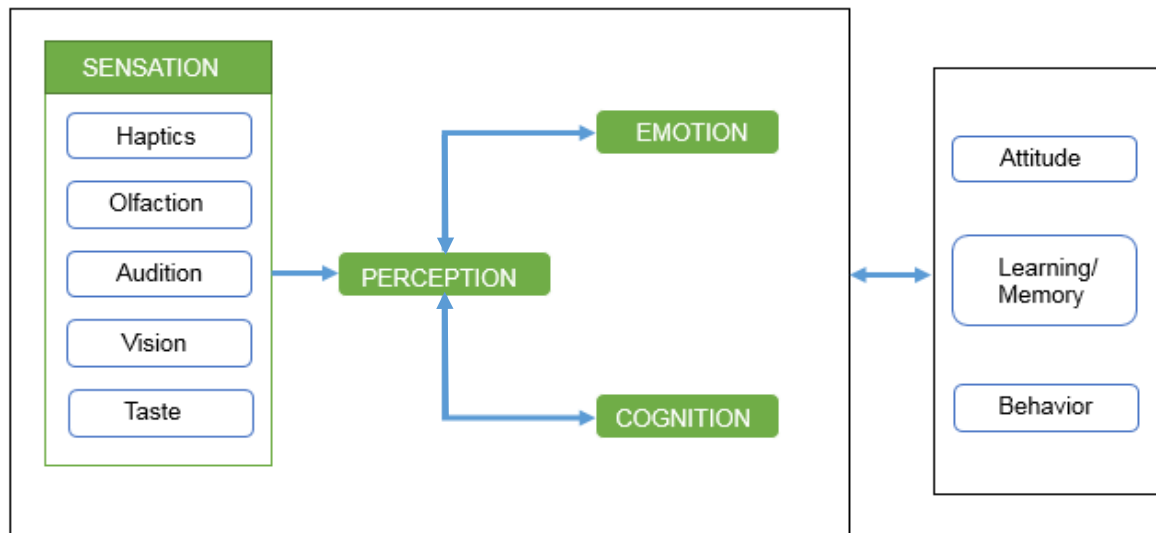
Olfaction system has a crucial role in *human reproduction* and *interaction* because humans can detect pheromones through the nose (Møller, 2003). The pheromones are special chemicals that animals, including humans, both receive and produce and they have been known to change human behaviour in social and sexual interplays (Møller, 2003). Pheromones help animals to detect the representatives of their own species and recognize potential mating partners. Pheromones might not have as strong of an effect on humans as they have on animals but they still might have an influence on how we choose our partners. In fact, in the study of McBurney et al. (2012) the odor of a romantic partner enhanced feelings of comfort in comparison to neutral scent and a scent of a random people.

2.2. THE PROCESS OF SMELLING

The basic process of smelling can be divided into two levels: *sensation* and *perception*. A sensation happens when a sensory stimulus collides with the sensory cells of a sensory organ. Specifically, smells and tastes are sensed when the molecules encounter the sensory receptors. The stronger the smell is the more molecules enter the nose. The physical contact with the sensory stimuli makes the sense of smell and taste completely different from sight and audition that are detected through waves. Another specialty of chemical senses in comparison to other senses is that before the stimulus arrives to the sensory receptors, the senses of taste and smell are quite inactive (Köster, 2002). In other words, humans do not actively search for sources of smell. After the sensation, the sensory stimulus is perceived. Perception refers to the process in which the person becomes aware and comprehends the “sensory message”. The perception is most often a sum of the stimulus information and past memories because the stimulus is always reflected against the existing knowledge (Dalton, 2012).

The process that leads from the sensory sensation to the actual response is complex and abstract. All the senses have their own special characteristics and effects which are moderated by numerous factors. The sensory marketing framework (Figure 1) suggested by Krishna (2012) is a great and simple illustration of the process of sensing and its relation to human behaviour.

Figure 1: A conceptual framework of sensory marketing (Krishna, 2012):



A conceptual framework of sensory marketing.

2.3. SPECIAL FEATURES OF THE SENSE OF SMELLING

The sense of smell has some distinctive features that make it different from other senses. These special features are briefly explained in the following paragraphs.

The most relevant aspects of scent for humans are *presence* and *quality* (Köster, 2002). This means that humans can notice scent's presence and pleasantness ("absolute sensitivity") and detect differences between scents ("quality discrimination") (Köster, 2002). In total, we can detect approximately 10,000 different odors (Buck, 2005). In contrast, humans are quite poor in noticing differences between intensity levels and other more subtle features that are necessary for perceiving for example visual stimuli (Köster, 2002). One example of this is the direction of scent. Unlike vision and sound, the smell itself does not tell us which direction it comes from. If you are unable to move and look around, you would have no idea of the direction the scent comes from (Herz and Engen, 1996; Köster, 2002).

The sense of smell is a *subjective sense* for several reasons. Firstly, humans have only a small amount of inborn smell preferences (Köster, 2002; Møller, 2003). In fact, by birth humans can detect only the smells and tastes of bitterness and rottenness and a few other strong scents (Köster, 2002). This is evolutionarily

convenient because it makes humans capable of adapting in varying conditions. Due to the previous fact, our culture and experiences teach us to appreciate certain odors and associate them with certain concepts and meanings (Møller, 2003). For instance, the scent of a rose makes us to think about rose flowers, which in turn might associate with romance and love. Secondly, scents are subjective because one's individual aspects such as age and medical condition affect one's ability to smell scents. Over time the capability smell tends to decline (Hof and Mobbs, 2001). Moreover, some people are genetically more sensitive to certain scents than others (Köster, 2002; Møller, 2003). This explains, for instance, why others enjoy spending time at a perfume section whereas others cannot stand it. Lastly, scents are subjective because people's expectations and beliefs influence their reactions to odors that they consciously know they are being exposed to (Dalton, 2012; Knasko, 1993).

The sense of smell is closely linked to *memory* and *emotions* because the olfactory system is directly connected with limbic system that manages our memories and emotions (Herz and Engen, 1996; Møller, 2003). One special characteristic of scent is that it takes longer to perceive them than other sensory stimuli. Yet the effect of scent stimuli will also remain for a longer period of time (Herz and Engen, 1996). The odor memory can be understood either as a memory of odors or as odor-evoked memories. Memory for odors refers to human capability to remember different odors. This type of a memory refers to the naming of odors, which will be explained in the next paragraph. On the other hand, odor-evoked memories are memories that are encoded by odors. These memories are strongly emotional and rare (Herz and Engen, 1996; Herz, 2012) and they often bring us to early childhood where they are mostly constructed (Chu and Downes, 2002; Herz, 2012). In addition, odors recall more specific autobiographical memories than other sensory cues (Chu and Downes, 2002). In fact, an odor-encoded memory is likely to strengthen over time (Lwin et al. 2010). Considering these factors, it is not a surprise that odor-encoded memories are considered the most powerful memories (Herz, 2012).

One special character of odors is that people have difficulties identifying them by name (Cain, 1979, cited by Köster, 2002). This may be because scents are intangible (Krishna et al. 2014) and because we lack knowledge of odor sources (Jönsson and Olsson, 2012). Although we might identify the scent as familiar, we might struggle to

recollect its name. However, when there is a hint of the source, identifying a scent by name becomes much easier (Krishna et al. 2014). For example, it is easier to identify a scent of lemon by name if a picture of lemon or even yellow colour is shown. Regarding this, it is not a surprise that odors are often named by their origin (Holley, 2002). One explanation for this is that the sense of smell is dominated by vision, which is why humans tend to trust sight more than smell when trying to deduce the origin of the scent (Köster, 2002). When we smell the scent of coffee we immediately look for visual evidence of the source (i.e. coffee cup or machine) (Degel and Köster, 1998, 1999 cited by Köster, 2002).

3 SCENTS IN THE CONTEXT OF MARKETING AND CONSUMER RESEARCH

Odors are not a new research topic in the marketing research field. In fact, many studies have examined the use of scents for marketing purposes (e.g. Doucé et al. 2014; Ellen and Bone, 1998; Goldkuhl and Styven, 2007; Herrman et al. 2013, Leenders et al. 2016). The marketing researchers have been interested in studying on one hand the specific odor dimensions and on the other hand the influence of odors on consumer's affection, cognition and behaviour (Bone and Ellen, 1999). These three approaches are covered in the following sections. In the end of this chapter, Figure 3, demonstrates the topics that have been under the researchers focus.

3.1. SCENT DIMENSIONS

Some aspects of scents have been regarded to be more essential than others for studying scents in the business context (Bone and Ellen, 1999). These scent features are odor's

- 1) presence
- 2) pleasantness
- 3) type
- 4) congruency
- 5) intensity
- 6) saliency

3.1.1. Odor presence, pleasantness and type

One of the obvious motivations for studying scents is to find out whether the presence of a scent affects customers. Indeed, scents have been found to have a positive effect on consumers' responses (e.g. Doucé et al. 2013; Herrmann et al. 2013; Leenders et al. 2016; Parsons, 2009) although the influence of a scent on consumer behaviour has seldom been solely dependent on the presence of a pleasant scent (Bone and Ellen, 1999). In fact, the effect of smell on consumers is so strong that sometimes the scent does not have to be present in order to have an effect. Krishna et al. (2014) presented this effect in their study. In their experiment, the participants started to salivate when they were shown a picture of a chocolate chip cookie and asked to imagine its smell. The scents used for business purposes must be perceived as pleasant because an unpleasant scent will lead to avoidance behaviour (i.e. less time spent at the store and decreased evaluations) (Gulas and Bloch, 1995). What is more, an unpleasant scent can make customers experience discomfort (Knasko, 1993). However, the pleasantness of a scent is not enough as the marketer has to take into account also other issues, such as the scent's appropriateness and intensity level. Moreover, the scent's effectiveness may also depend on its "character" (Gagarina and Pikturniene, 2015; Herrman et al. 2013; Hirsch, 1995; Mattila and Wirtz, 2001).

A scent's "individual" character is likely to modify the consumers' response (Cirrincione et al. 2014; Gagarina and Pikturniene, 2015; Hermann et al. 2013; Hirsch, 1995; Madzharov et al., 2015; Morrin and Ratneshwar, 2000; Spangenberg et al. 1995). To demonstrate this, odors most likely differ in terms of their affective and activating natures (Spangenberg et al. 1996). According to Spangenberg et al. (1996), odors that have strong emotional dimension are described as more attractive, relaxed, comfortable and good than those with less affective nature. Likewise, activating odor is perceived as more stimulating, lively, bright, motivating and interesting than scents that have a less activating character. There are also other ways of grouping odors. For instance, in the study of Madzharov et al. (2015) scents were rated according to their perceived temperature (cool and warm).

The research findings demonstrate that not all pleasant smells are the same. Gagarina and Pikturniene (2015) discovered that peppermint scent made participants more

willing to take risks than vanilla scent although both scents were rated equally pleasant. Also Hermann et al. (2013) suggest that the “character of the scent” has influence on the research results. In their study, they demonstrated that only the use of a simple pleasant scent affected positively on consumers shopping behaviour and cognitive processing. Interestingly, no difference between a condition with a complex pleasant ambient scent and unscented control condition was found. Correspondingly, Cirrincione et al. (2014) found that art exhibition visitors recalled and evaluated artworks better under neutral scent than under a scent that was perceived more pleasant. In turn, the findings of Madzharov et al. (2015) show that warm ambient odors encourage consumers to buy expensive products. Morrin and Ratneshwar (2000) conclude that the newness of the odor has an impact on consumers’ cognition.

3.1.2. Odor congruence

Scent congruence and its effects on consumer behaviour has been studied greatly in the marketing literature (Bone and Ellen, 1999; Bosmans, 2006; Doucé et al. 2014; Ellen and Bone, 1998; Ludden and Schifferstein. 2009; Mitchell et al. 1995; Morrin and Ratneshwar, 2003). In summary, the term congruence describes the scent’s fit with the other contextual cues. The studies examining the smell congruence have focused on topics such as the scent’s match with the product category (Bosmans, 2006; Ludden and Schifferstein. 2009; Mitchell et al. 1995; Morrin and Ratneshwar, 2003), its suitability with a naturally odorless store concept (Parson, 2009) and the effects of music and matching scent (Mattila and Wirtz, 2001; Spangenberg et al. 2005). Also gender-scent congruity (Spangenberg et al. 2006), product display-scent congruity (Fiore et al. 2000) and artwork-odor congruity (Cirrincione et al. 2014) have been investigated. Despite of the substantial interest toward the topic, the research findings vary as the next two paragraphs will demonstrate.

Some researchers have found that the congruity of a scent is an important contributor to the effects that scents have on human behaviour (e.g. Bosmans, 2006; Cirrincione et al. 2014; Mattila and Wirtz, 2001; Mitchell et al, 1995; Parsons, 2009). For example, Mitchell et al. (1995) found that congruence between a pleasant scent and a product category affected people’s decision making process by increasing the time spent analyzing product information and by making the analysis more comprehensive. In

addition, Parsons (2009) discovered that a pleasant ambient scent has a positive impact on consumer behaviour only when the scent is perceived to fit the environment. Further, Spangenberg et al. (2006) reported that when gender-associated products were combined with gender-congruent scent, the product and store evaluations were better than when an incongruent scent was used. In line with this, Doucé et al. (2014) found that an pleasant ambient scent (black cherry) in an unorganized retail store environment made the customers evaluate products more negatively compared to using the same scent in a tidy store. However, the negative product evaluation effect did not happen in an untidy store when the pleasant scent was associated with cleanliness (lemon-tangerine) (Doucé et al. 2014).

There have also been contradictory results. Bone and Ellen (1998) observed that a scented advertisement with matching scent had no impact on how positively consumers reacted to the ad. Instead, they found that an advertisement with an unsuitable but pleasant scent had an unwanted effect on consumers who were willing to analyze the ads information in depth. Furthermore, Ludden and Schifferstein (2009) failed to discover evidence that scent's appropriateness would have major impact on product preference. In turn, Cirrincione et al. (2014) demonstrated how artworks were more arousing when they were combined with an incongruent odor. To make things more complicated, Bosmans (2006) as well as Morrin and Ratneshwar (2003) both discovered that the presence of both an incongruent and a congruent scent had a positive influence on product evaluations compared to a condition without any ambient scent.

Considering the varying research results detailed above, it is hard to draw a conclusion of how much a scent's congruency influences the consumer behaviour. However, it is unlikely that scent's congruency is completely insignificant. This is because scents are often associated with spaces, situations and goods (Doucé et al. 2014; Parson, 2009). As an example, in Parson's (2009) study the consumers considered the smell of coffee suitable for a bookstore, perfume for a lingerie store, and soap for an appliance shop. When these scents and places were mixed, they resulted in negative responses. Thus, scent's congruence must affect at least on some level. In fact, it may be so that scent congruency matters only when it is incongruent. To emphasize this, Bone and Ellen

(1999) point out that study results often show a negative effect created by an unfitting scent rather than a positive effect created by more fitting scent.

Researchers have also studied the synergy between the sense of smell and the sense of hearing with a positive results (Mattila and Wirtz, 2001; Spangenberg et al. 2005). Mattila and Wirtz (2001) observed that when pleasant music and scent were perceived equally alerting, consumers enjoyed the shopping experience more and made significantly more impulse purchases. In line with this observation, Spangenberg et al. (2005) proved that similarity between the background music (Christmas music) and scent (Christmas scent) made the store more appealing to customers, increased their level of satisfaction and excitement and made them more willing to return to the store.

3.1.3. Odor intensity and saliency

The intensity of a scent has also drawn marketing scholars' attention (Bosmans, 2006; Douché and Janssens, 2013; Doucé et al. 2014; Gagarina and Pikturniene, 2015; Leenders et al. 2016). For marketers, it is necessary to pay attention to the strength of the scent because an odor should be neither too intense nor too mild. An overly intense scent will cause a negative effect regardless of its pleasantness. Likewise, an ambient odor that is not intensive enough may not have a measurable effect on consumers' behaviour (Gagarina and Pikturniene, 2015; Leenders et al. 2016;) or the effect may even be negative (Leenders et al. 2016). The intensity level does not have to be specific. Whereas people can see already a 2% difference in brightness, they will only notice an increase in scent intensity level once it is over 20% (Köster, 2002). Hence, if a scent is not disturbingly intense or too mild, the different intensity levels do not play a huge role (Spangenberg et, 1996).

An effective scent intensity level does not automatically mean that the scent is so intense that a consumer spontaneously detects it. This is because also unconsciously perceived scents can have an effect on consumers (Davies et al. 2003; Ward et al. 2003). Yet this effect may be slightly different from the effect provoked by a consciously perceived scent because it has been speculated that a scent has to draw the recipient's attention in order to be perceived consciously (Davies et al. 2003). In fact, research suggest that unconsciously perceived scents have more powerful influence on human

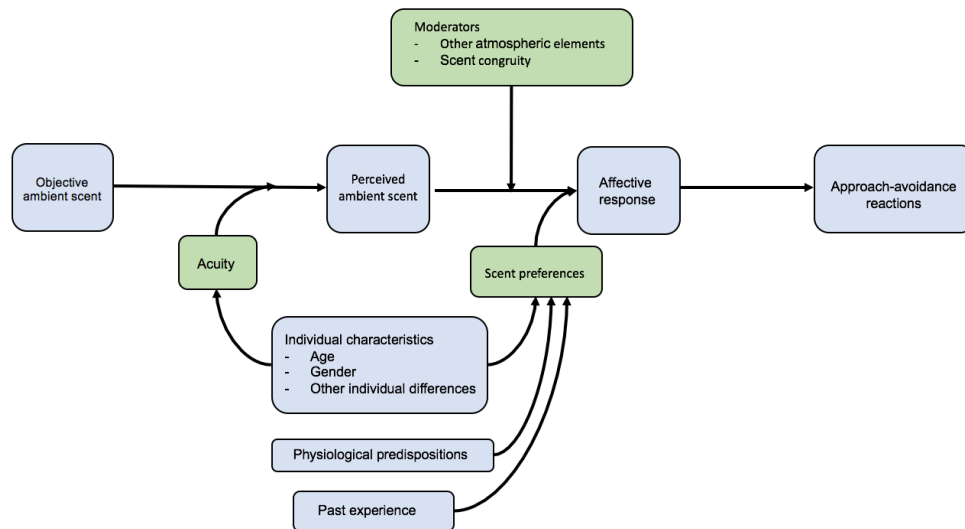
behaviour than scents people can identify (Degel and Köster, 1999, cited by Köster, 2002). This may be because of the saliency effect (Bosmans, 2006) explained in the following paragraph. Moreover, it is important to notice that although people notice a scent, they can also easily habituate to it. Thus, the effect of the same scent can actually change very quickly.

The intensity and saliency of scent are closely linked. When an odor is intensive enough, people become aware of its presence. The saliency of scent influences how much the scent changes consumer behaviour and especially their evaluations (Bosmans, 2006). For example, when an unfitting scent is made salient, it stops having an effect on product evaluations because people will correct its effects (Bosmans, 2006). However, when the scent and the product match, saliency does not prevent the positive effect that an ambient scent has on the product judgement (Bosmans, 2006). Overall, when a scent is made salient, people will pay more attention to it (Ludden and Schifferstein, 2009). This can sometimes harm the customer response. If an ambient scent is too obviously used for marketing purposes it can make customers adopt a skeptical attitude toward the seller and, thus, lower the evaluations (Lunardo, 2012).

3.2. EFFECTS OF SCENTS ON CONSUMER BEHAVIOUR

The sense of smell is significant factor but there is still a lack of comprehensive research on the subject (Chebat and Michon, 2003; Ward et al. 2003). Thus, it is not surprising that there are no general theoretical models on how scent's influence consumer behaviour. However, the most common framework used in the marketing research for studying the sense of smell is the Model of the Influence of Ambient Scent on Consumer Responses created by Gulas and Bloch (1995).

Figure 2: The Model of the Influence of Ambient Scent on Consumer Responses created by Gulas and Bloch (1995):



Gulas and Bloch (1995)

The model of Gulas and Bloch (1995) suggests that the perceived smell creates either a positive or a negative affective response depending on the consumer's individual scent preferences and "his/hers physiological predispositions". The strength of this affective response is influenced by some moderators, such as the scent's appropriateness with the context and other aspects of the environment. The emerged affective response is assumed to lead either to approach or avoidance behaviour. The model is based on a stimulus-organism-response (S-O-R) approach introduced by Mehrabian and Russell (1974, cited by Davies et al. 2013), which suggest that environmental stimuli generates either approach or avoidance behaviour depending on what kind of a mix of pleasure, arousal and dominance (PAD) the perceived stimuli has. The model of Gulas and Bloch has also been developed further by several scholars (Davies et al. 2003; Ward et al. 2003).

Gulas and Bloch's model is, indeed, a frequently used framework in the academic literature exploring scents and consumer behaviour (e.g. Doucé et al. 2013; Spangenberg et al. 1995; Spangenberg et al. 2006; Vinitzky and Mazursky, 2011). Due to the common use of this framework, many researchers have studied scents' relationship with affection and avoidance-approach behaviours (Douce et al. 2013; Vinitzky and Mazursky, 2011). Approach-behaviour refers to all types of positive behaviour directed toward environment, such as increased browsing time and desire to spend more time in the store (Mitchell et al. 1996). On the other hand, avoidance

behaviour refers to the desire to move away from the environment. According to Gulas and Bloch (1996), scent's effect on consumer behaviour can also be mediated by cognition.

Scent's effect on consumers may depend on consumer's *individual differences* such as gender and age. Some scholars have also taken this factor into account (Doucé and Janssens, 2013). One very common individual character of consumers is their psychological gender because women are considered to be more sensitive toward scents than men (Hermans and Bayens, 2002). In marketing research, gender has been found to both have an effect (Doucé et al. 2013) and have no effect (Leenders et al. 2016) on the customer's' ability to detect smells. In fact, some studies have used only female subjects to control the moderating effect of gender (e.g. Ellen and Bone, 1998; Fiore et al. 2000).

Also other personal differences have been studied. For instance, Douce and Janssens (2013) found that odors have a greater effect on highly emotional consumers' evaluations and willingness to visit the store again. In turn, Leenders et al. (2016) noticed that scents have a powerful influence on the mood of busy consumers. Moreover, the consumer's cognitive thinking style has been observed to influence the strength of the scent's effect on consumers (Vinitzky and Mazursky, 2011). In addition, Ellen and Bone (1998) observed how the different levels of consumer's processing motivation affect the research results and concluded that new odors have a more powerful impact on consumers who are less motivated to analyze the information. The findings of Bosmans (2006) support this proposition.

3.2.1. Affective response towards odors

Many studies have been conducted on the odor's effect on consumer affection (Doucé et al. 2014; Doucé and Janssens, 2013; Parsons, 2009). More specifically, scholars have studied subjects such as mood (Morrin and Ratneshwar, 2000; Knasko, 1993; Leenders et al. 2016), pleasure (Doucé et al. 2014; Doucé and Janssens, 2013; Fiore et al. 2000; Lunardo, 2012), affective priming (Doucé et al. 2014) and arousal (Cirrincione et al. 2014). The interest for this topic likely stems from the assumption that scents affect people's moods which in turn leads to changes in consumer

behaviour. This assumption is logical considering that the olfactory system is in close connection with the limbic system (Herz and Engen, 1996). Moreover, scents are believed, for instance, to make people feel happy or decrease their stress and anxiety levels. In fact, a well-known complementary therapy form, aromatherapy, is completely based on the belief that aromatic oils have healing features and that they can contribute to person's well-being (Reinartz, 2014). Interestingly though, if these assumptions were true, companies could use ambient scents to doctor customers into "shopping mood". Yet the findings are somewhat divided as the next paragraphs will demonstrate.

Several research papers have found that scent influences consumer behaviour through affective responses (mood, pleasure and arousal). Ellen and Bone (1998) discovered that ambient odors impact the mood state. Additionally, the observations of Leenders et al. (2016) demonstrate that odors can change people's mood especially when they are in a hurry. In turn, Douce and Janssens (2013) found that in an ambient scent condition the consumers felt happier, pleased, satisfied and more content than in an unscented condition.

On the other hand, neither Bone and Ellen (1999) nor Knasko (1993) found scents to have any significant effect on consumer reactions created by mood. More recent studies have also reached similar conclusions. Morrin and Ratneshwar (2000) concluded that ambient scent does not have an effect on customers' mood or arousal levels. Chebat and Michon (2003) reported that ambient scent does not affect consumers mood although the mood itself influences consumer's impression of the store environment. Hence, the scent's effect on mood could be indirect. In addition, Douce et al. (2014) discovered no influence on consumers' feelings.

3.2.2. Cognitive response and evaluation of odors

In addition to affection, scholars in the field of marketing research have also studied the effects of scents on cognition (e.g. Cirrincione et al. 2014; Krishna, 2010; Krishna et al. 2010; Lwin et al. 2010; Morrin and Ratneshwar, 2003; Morrin and Ratneshwar, 2000; Orth & Bourrain, 2008; Vinitzky and Mazursky, 2011). The most studied cognitive elements are memory and evaluation.

The relationship between pleasant odors and *memory* has interested many researcher studying odors in the marketing context (Cirrincione et al. 2014; Krishna, 2010; Krishna et al. 2010; Lwin et al. 2010; Morrin and Ratneshwar, 2000, Morrin and Ratneshwar, 2003; Orth & Bourrain, 2008). Smells and memory have been studied at least from two different perspectives. These are *odor-evoked memories* and *odor's effect on consumer memory*. Interestingly, consumer's memory for odors – a subject that seems to have greatly gathered attention in the psychology literature – has been left out of the scope in marketing literature.

Odors can evoke memories and especially *nostalgic memories* (Orth & Bourdain, 2008). From the marketer's perspective, the odor-evoked memories can be divided into two slightly overlapping sections. Firstly, scents can activate consumer's memories by recalling enjoyable moments and emotions from the consumer's past. For example, the smell of birch can remind some consumers of Finnish midsummer and the smell orange and cloves of Christmas Eve. When the memory appears in the consumer's mind, the consumer becomes more curious about the retail environment (Orth & Bourdain, 2008). The memory-evoking scent does not necessarily have to be an ambient scent: also scents that recall positive memories have been observed to improve customer evaluations (Sugiyama et al. 2015).

A pleasant odor can evoke memories associated with a specific retailer (Davies et al. 2003; Ward et al. 2003). For instance, Starbucks coffee has distinctive coffee smell that the consumers can easily distinguish from other coffee brands. This way of using the scent is recognized as a creation of "sense of place" (Davies et al. 2003; Ward et al. 2003). The sense of place refers to the company's aim of building its brand through a specific scent. Here the scent works as a brand attribute (Ward et al. 2003).

The purpose for using a scent sets a special requirement for the scent type. If the retailer aims to use scents for creating a "sense of place", the scent has to be novel and distinguishable in order to create a memory cue (Ward et al. 2003). When the scent is instead used to create a certain atmosphere, it can be more general – for example rose or coffee.

Scents have been noticed to improve *customer's memory* (Krishna et al. 2010; Lwin et al. 2010; Morrin and Ratneshwar, 2003; Morrin and Ratneshwar, 2000). In the study of Morrin and Ratneshwar (2000), a pleasant ambient odor increased the consumer's ability to remember unfamiliar brands. The researchers hypothesize that this may be because the scent may have raised the customers' attention levels and lengthened the observation time. Similarly, Lwin et al. (2010) observed that odors positively impact verbal recall and assist other senses in remembering (Lwin et al. 2010). In turn, Krishna et al. (2010) found that consumers remember product attributes better when they observe them in a scented condition. This effect was particularly strong when the product itself was scented. These positive results should, however, be interpreted with caution considering that Cirrincione et al. (2014) noticed that the presence of a pleasant odor actually decreased the viewer's capability to remember odors.

Much of the research has focused on scent's effect on *evaluation* (Chebat and Michon, 2003; Cirrincione et al. 2014; Doucé and Janssens, 2013; Doucé et al. 2014; Fiore et al. 2000; Leenders et al. 2016; Morrin and Ratneshwar, 2000; Spangenberg et al. 2006; Spangenberg et al. 2006) and for a good reason. The presence of a pleasant ambient scent has on several occasions been found to improve evaluation of products (Bosmans, 2006; Doucé et al. 2014; Ludden and Schifferstein, 2009), store environment (Morrin and Ratneshwar, 2000; Leenders et al. 2016) or both (Doucé and Janssens, 2013; Spangenberg et al. 2006). Moreover, scents have been found to increase the time used for observation (Morrin and Ratneshwar, 2000). In addition to these findings, researchers have also demonstrated that if the ambient odor does not fit into the environment, it may actually worsen the evaluations (Doucé et al. 2014). In their study, Doucé et al. (2014) discovered that enjoyable ambient scent paired with unsuitable surrounding (messy store) can make the product unattractive. Similarly, Spangenberg et al. (2006) demonstrated how ambient scent can have a negative effect on customer evaluations when combined with a music that does not match with it.

There are a few reasons for the improved product evaluations. One is that pleasant ambient scents increase customers' positive attitude toward the shopping environment (Chebat and Michon, 2003; Parsons, 2009) which, in turn, is likely to lead to improvement in product evaluations (Chebat and Michon, 2003). Another explanation is that the scent gives consumer relevant additional information about the product and

thus makes the consumer's attitude toward the product more positive (Bosmans, 2006). However, if the managers are willing to "boost" their products with a scent, the scent should give the customers new and relevant information (Bone and Ellen, 1999). In addition, marketers should pay special attention to the congruency of the scent, as it will produce the best result (Fiore et al. 2000).

Also other effects on consumer's cognitive response has been discovered. Vinitzky and Mazursky (2011) reported that under ambient odor consumers are likely to be more motivated to search products from online store. People are observed to be more willing to make *risky decisions* under ambient scent's affect (Gagarina and Pikturniene, 2016; Gagarina and Pikturniene, 2015; Hirsch, 1995; Orth & Bourrain, 2008). To demonstrate this, Hirsch (1995) observed that more money was fed to a slot machine when the gambling was made under ambient scent. Considering these findings, an ambient scent can be a useful tool for retailers whose offerings involve high-perceived-risk. In addition, scents have been found to make waiting in line more pleasant for customers especially when combined with music (McDonnell, 2007).

3.2.3. Approach-avoidance behaviour and purchase behavior

Scholars have also investigated the direct effect of odors on *consumer behaviour* (e.g. Doucé et al. 2013; Herrman et al. 2013; Leenders et al. 2016; Orth and Bourrain, 2008; Parsons, 2009; Spangenberg et al. 1995). More specifically, the research focus has been on behavioural responses such as buying behaviour (Chebat and Michon, 2003; Doucé et al. 2013; Herrman et al. 2013; Leenders et al. 2016; Madzharov et al. 2015; Mattila and Wirtz, 2001; McGrath et al. 2016; Parsons, 2009; Spangenberg et al. 2006; Spangenberg et al. 1996; Vinitzky and Mazursky, 2011), perceived and actual in-store browsing time (Leenders et al. 2016; Parsons, 2009; Spangenberg et al. 2006; Spangenberg et al. 1995; Vinitzky and Mazursky, 2011), risk-related behaviour (Gagarina and Pikturniene, 2016; Orth and Bourrain, 2008), goal-directed behaviour (Doucé et al. 2013), curiosity-motivated behaviour (Doucé et al. 2013; Mattila and Wirtz, 2001; Orth and Bourrain, 2008; Spangenberg et al. 1996; Vinitzky and Mazursky, 2011), variety seeking (Madzharov et al. 2015; Mitchell et al. 1995; Orth and Bourrain, 2008; Vinitzky and Mazursky, 2011) and intention to revisit the store (Doucé

and Janssens, 2013; Mattila and Wirtz, 2001; Spangenberg et al. 2006; Spangenberg et al. 1996).

Under ambient scents consumers have been found to be more curious about the offerings (Orth and Bourrain, 2008; Spangenberg et al. 1996) and seek variety (Orth and Bourrain, 2008). The consumers are also more willing to return to the store after they have been exposed to its environmental fragrance (Doucé and Janssens, 2013; Spangenberg et al. 2006). In addition, the supporting research findings suggest that pleasant environmental fragrance can invite people to stay longer in the store and make them exam products more in depth (Chebat and Michon, 2003; Doucé et al. 2013; Jacob et al. 2014; Leenders et al. 2016; Parsons, 2009; Spangenberg et al. 2006; Vinitzky and Mazursky, 2011). In fact, one of the most common discoveries is that consumers underestimate the time they spend in a store where an ambient odor is present (Leenders et al. 2016; Spangenberg et al. 2006; Spangenberg et al. 1996). However, the subject of using scents in marketing still requires further research considering that, for instance, the findings of Spangenberg et al. (1996) were contradictory and found that odors had no effect on time spent in the shop.

Some researchers suggest that scents also have a direct effect on the *amount of spending and purchase level* (Hermann et al. 2013; Jakob et al. 2013; Leenders et al. 2016; Madzharov et al. 2015; Spangenberg et al. 2006; Vinitzky and Mazursky, 2011). What is more, studies have been conducted on how ambient scents affect consumers' purchase intentions (Herrmann et al. 2013; Leenders et al. 2016; Spangenberg et al. 1996). For instance, Herrmann et al. (2013) found that the existence of a simple scent makes consumers purchase goods faster than when the scent was more complex or nonexistent. In turn, Leenders et al. (2016) noticed that customers made more impulse purchases under a congruent scent. Mattila and Wirtz (2001) found a similar effect evoked by a matching combination of music and ambient odor. Also the experiments of Spangenberg et al. (1996) indicated that odors have a positive influence on purchase intentions although the researchers only found product specific improvements. On the other hand, Madzharov et al. (2015) demonstrated how an ambient scent that was perceived as warm made customer prefer premium products. Despite the fact that several studies support the claims that using scent positively impacts the shopping experience, also contradictory findings exists. For instance,

McGrath et al. (2016) did not manage to find any evidence that a scent would affect the purchase level.

Figure 3: Mapping the existing academic literature on scents

Articles	Scent dimensions					Effects on consumers		
	Presence	Type (ie. alertness, complexity)	Pleasantness	Congruency	Intensity / Saliency	Affective response	Cognitive response	Behaviour
Knafo, 1993	-	-	X	-	-	X	-	X
Mitchell et al., 1995	x	-	x	X	x	-	X	-
Hirsch, 1995	x	x	x	-	-	-	-	X
Spangenberg et al., 1996	x	x	x	-	x	-	X	X
Bone and Ellen, 1999	X	-	X	X	-	X	X	X
Spangenberg et al., 2000	-	x	x	X	x	-	X	X
Morrin and Ratneshwar, 2000	X	-	x	-	x	X	X	-
Friore et al., 2000	x	-	x	X	x	X	X	X
Mattila and Wirtz, 2001	x	x	x	X	x	X	X	X
Morrin and Ratneshwar, 2003	x	x	x	X	-	X	X	-
Chebat and Michon, 2003	-	x	-	x	--	X	X	X
Spangenberg et al., 2005	x	-	x	x	x	X	X	-
Bosmans, 2006	x	-	-	X	X	x	X	-
McDonnell, 2007	x	-	-	-	X	X	X	-
Orth and Bourrain, 2008	x	-	x	-	x	-	X	X
Parsons, 2008	x	-	-	X	-	X	X	X
Ludden and Schifferstein, 2009	x	-	x	X	-	-	X	-
Lwin et al., 2010	x	-	x	x	x	-	X	-
Lunardo, 2011	-	-	-	x	-	X	X	-
Vitnitsky and Mazursky, 2011	x	-	-	-	-	-	X	X
Douce et al., 2013	-	x	-	X	x	-	-	X
Hermann et al., 2013	x	X	x	x	-	-	-	X
Jakob et al., 2013	X	-	-	x	x	-	-	X
Ellen and Bone, 2013	x	-	-	X	x	x	X	-
Douce and Janssens, 2013	-	x	x	-	x	X	X	X
Douce et al., 2014	x	X	x	X	x	X	X	X
Cirincione et al., 2014	-	-	x	X	-	-	X	-
Madzharov et al., 2015	x	X	x	-	x	-	-	X
McGrath et al., 2016	x	-	x	X	x	-	-	X
Gagarina and Plikturiene, 2016	x	X	-	-	X	-	X	-
Leenders et al., 2016	x	-	x	-	X	X	X	X

X = Main focus of the study

x = The study takes in to account

4 DISCUSSION

This literature review has demonstrated how using scents can benefit companies and boost their business. Odors are found to be tempting marketing tools because they can evoke strong emotional memories (Orth & Bourdain, 2008), improve customers' evaluations (e.g. Bosmans, 2006; Doucé et al. 2014; Ludden and Schifferstein, 2009; Sugiyama et al. 2015), and make customers spend more time in the store (Leenders et al. 2016; Parsons, 2009; Spangenberg et al. 2006; Spangenberg et al. 1995; Vinitzky and Mazursky, 2011). There is also evidence that scents can directly increase sales (e.g. Hermann et al. 2013; Jakob et al. 2013; Leenders et al. 2016).

The studies presented in this literature review suggest that odors can be beneficial in *branding*. Several study results have shown that consumers will evaluate the shopping environment and offerings more positively under ambient scents (e.g. Doucé and Janssens, 2013; Spangenberg et al. 2006). The positive attitude toward the company and its offerings is likely to lead to a positive brand image and unconscious sensory triggers (e.g. sound, smell, and touch) might encourage consumers to self-develop positive brand associations (Krishna, 2012). Moreover, considering that much of the benefits of scent marketing is based on the fact that odors affect consumers unconsciously, scent marketing can make some brands simply “feel” more right than others.

Another reason why odors might increase the brand value is that consumers remember brands better when these are encoded with pleasant odors. As an example, the study of Morrin and Ratneshwar (2003) showed that ambient scents improve “both brand recall and recognition of familiar and unfamiliar brands” regardless of how well the product category and the ambient smell fit together. In turn, Ward et al. (2013) proposed that with pleasant and novel scents retailers can create new memories for their customers, memories that are associated with them. In addition, a signature scent can help a company to distinguish itself from its rivals (Doucé and Janssens, 2013; Mattila and Wirtz, 2001; Spangenberg et al. 1996).

Despite the supporting research findings (e.g. Doucé and Janssens, 2013; Spangenberg et al. 2006), only a small amount of research has considered scent as a brand dimension and recognized it as a potential “tool” for creating a stronger brand (Hulten, 2011). This is surprising as many companies have started to brand themselves with odors (Goldkuhl and Styven, 2007; Klara, 2012). Indeed, scent among other sensory stimuli is a marketing communication (Hulten, 2011; Kotler 1973-1974) that affects the overall brand image. The relationship between a brand and scents is a fruitful study field.

The rapidly developing technological devices, game industry and virtual world may offer interesting opportunities for scent marketing in the future, because there is a growing interest toward more holistic sensory design (Porges, 2016). In fact, the consumers have already been found to spend more time in the online store when browsing under ambient scent (Mazursky and Vinitzky, 2011). Here the new emerging study field, sensory marketing, might offer important perspectives to studying scents in the marketing context. Sensory marketing is “marketing that engages the consumers’ senses and affects their perception, judgement and behaviour” (Krishna, 2010). The sensory marketing approach employs a broad approach for using senses for marketing purposes and studies how the different senses are utilized to create a holistic customer experience, which includes the whole value chain (Krishna, 2010). As this thesis has proven, most of the academic literature on odors focus merely on the sense of smell. The sensory marketing perspective may help us to start gaining understanding of how different senses work together (Krishna, 2010). This is necessary as, for instance, vision is known to dominate olfaction (Köster, 2002) which may have an effect on how the smell is perceived. Moreover, the studies of Mattila and Wirtz (2001) and Spangenberg et al. (2005) demonstrated how congruency between two sensory stimuli can lead to commercial success.

Regarding the academic literature presented in this thesis, marketers should consider adding odors in the marketing mix with caution. It is important to recognize that although scent marketing is a fairly recognized study field, the research results have been varying (McGrath et al. 2016). In addition, despite the interest toward the topic (e.g. Bone and Ellen, 1999; Chebat and Michon, 2003; Davies et al. 2003, Herrmann et al. 2013) a general theory background for scent marketing is still missing. Thus, the

way scents influence consumers along with the different mediators and moderators of the process remain still somewhat a mystery (Leenders et al. 2016). In addition, more research needs to be conducted on how scents differ from each other in terms of their character and effect. Consequently, the commercial benefits and disadvantages of using odors are difficult to estimate and measure beforehand. This can pose a serious risk considering that sometimes scents have been found to have detrimental effects on the consumer's liking (Cirrincione et al. 2014; Doucé et al. 2014; Ellen and Bone, 1998; Parsons, 2009). Moreover, scents may also not be the best marketing tool considering that some people are oversensitive to scents. For those people, scents can cause psychological problems such as headache and difficulties in breathing (Allergia.fi, 2017). Hence, more research needs to be conducted on scent types and their allergenic features.

The need for future research should, however, not be viewed as an argument against scent marketing. Regardless of the risks, marketers should still be willing to start using scents to promote their businesses. Nevertheless, before investing in a scent diffuser, the studies presented in this literature review suggest that the marketer should pay attention at least to the following factors. Firstly, the scent should be perceived as pleasant by most people because the malodors will result in negative customer responses (Knasko, 1993). A similar effect can also be created with a too intense scent (Richardson and Zucco, 1989, cited by Leenders et al. 2016). Secondly, the scent should match with the offering and the overall atmosphere of the store (e.g. Doucé et al. 2013; Mitchell et al. 1995; Parsons, 2009). Lastly, the special characteristics of target segment should be considered when choosing the scent (Doucé and Janssens, 2013).

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